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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,109	09/30/2003	Ji-Cheng Zhao	134082-1	4987

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
WARTALOWICZ, PAUL A	
ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/675,109	ZHAO ET AL.	
	Examiner	Art Unit	
	Paul A. Wartalowicz	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *1-12,17,19-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-16 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-30* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-16, and 18, drawn to a method, classified in class 423, subclass 286, 648.1.

II. Claims 19-21, drawn to a composition, classified in class 423, subclass 648.1.

III. Claims 17, and 22-30, drawn to an apparatus, classified in class 422, subclass 235.

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as wherein treating the substrate to create a diffusion multiple.

Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP §

806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as without a hydride recycle reactor.

Inventions III and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus such as one without a hydride recycle reactor.

If the applicant elects Group I, *an election of species must also be made.*

This application contains claims directed to the following patentably distinct species of the claimed invention:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

Species A. Claims 1-12, drawn to method for making and screening a combinatorial library.

Species B. Claims 13-16, and 18, drawn to recovering hydrogen.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims

readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with David Rodrigues on November 15, 2005 a provisional election was made with traverse to prosecute the invention of Group I, Species B drawn to a method for recovering hydrogen, claims 13-16 and 18. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 1-12, 17, and 19-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 13 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. (U.S. 2003/0113252).

Chen et al. teach a hydrogen storage material wherein lithium, sodium, or potassium (paragraph 0015) is bonded to carbon in the molar ratio from 5000:1 to about 1:200 (paragraph 0017, lines 1-4) wherein the afore mentioned compound is reacted with hydrogen (paragraph 0033, lines 5-8) wherein heating the hydrogenated compound achieves desorption of hydrogen (paragraph 0020, lines 1-4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 2003/0113252) in view of Jensen et al. (U.S. 2004/0009121).

Chen et al. teach a method for recovering hydrogen as described above (paragraph 0020, lines 1-4). Chen et al. fail to teach heating conducted using microwave radiation, convectional heating, and electrical resistive heating.

Jensen et al., however, teach a method for hydrogen storage (paragraph 0003) wherein release of hydrogen from a composition requires heating wherein the heating is conducted using electrical heating elements (paragraph 0076, lines 10-12).

Therefore, it would have been obvious to one of ordinary skill in the art to provide electrical heating elements in Chen et al. in order to recover hydrogen from a composition (paragraph 0076, lines 10-12) in a chemically similar process as taught by Jensen et al.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 2003/0113252) in view of Chen et al. (U.S. 2003/0129126).

2003/0113252 teach a method for recovering hydrogen as described above (paragraph 0020, lines 1-4). 2003/0113252 fail to teach adding a dopant comprising titanium, vanadium, zirconium, yttrium, lanthanum, nickel, manganese, cobalt, silicon, gallium, germanium, and the elements from the lanthanide series to the compound in an amount of less than or equal to about 20 wt% of the compound.

U.S. 2003/0129126, however, teach a method for hydrogen storage (paragraph 0002) wherein a dopant is added to the metal compound (paragraph 0016, lines 1-3). U.S. 2003/0129126 also teach the dopant comprising silicon, titanium, nickel, cobalt (paragraph 0016, lines 7-9) in a ratio to the metal compounds of from 1:1000 to 1:1 (paragraph 0016, lines 13-15). U.S. 2003/0129126 also teach that the admixture of dopants can lead to new compounds which are effective for the absorption of hydrogen (paragraph 0017, lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art to provide one or more of the afore mentioned dopants (paragraph 0016, lines 7-9) in the afore mentioned ratio range (paragraph 0016, lines 13-15) in 2003/0113252 in order to lead to new compounds which are effective for the absorption of hydrogen (paragraph 0017, lines 1-5) as taught by U.S. 2003/0129126.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 2003/0113252) in view of Klett et al. (U.S. 2003/0175201).

Chen et al. teach a method for recovering hydrogen as described above (paragraph 0020, lines 1-4). Chen et al. fail to teach wherein the heating is effected by the heat from the exhaust of a fuel cell.

Klett et al., however, teach a process for pre-treatment of a fuel cell (paragraph 0003, lines 1-3) comprising a heating step wherein the heating is achieved using the exhaust products of the fuel cell (paragraph 0018, lines 20-22).

Therefore, it would have been obvious to one of ordinary skill in the art to provide using the exhaust products of a fuel cell (paragraph 0018, lines 20-22) in Chen et al. in order to provide heat in a process using a fuel cell (paragraph 0018, lines 20-22) as taught by Klett et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Wartalowicz
November 18, 2005

COLLEEN P. COOKE
PRIMARY EXAMINER